

WHOLE-BODY MATHEMATICAL MODEL FOR SIMULATING INTRACRANIAL PRESSURE DYNAMICS

A whole-body mathematical model (10) for simulating intracranial pressure dynamics. In one embodiment, model (10) includes 17 interacting compartments, of which nine lie entirely outside of intracranial vault (14). Compartments (F) and (T) are defined to distinguish ventricular from extraventricular CSF. The vasculature of the intracranial system within cranial vault (14) is also subdivided into five compartments (A, C, P, V, and S, respectively) representing the intracranial arteries, capillaries, choroid plexus, veins, and venous sinus. The body's extracranial systemic vasculature is divided into six compartments (I, J, O, Z, D, and X, respectively) representing the arteries, capillaries, and veins of the central body and the lower body. Compartments (G) and (B) include tissue and the associated interstitial fluid in the intracranial and lower regions. Compartment (Y) is a composite involving the tissues, organs, and pulmonary circulation of the central body and compartment (M) represents the external environment.

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